

ABSTRACT

A method for producing a silicon single crystal by a Czochralski method in order to provide a method capable of affording a wide defect free zone stably to a silicon single crystal wafer produced by a Czochralski method, wherein a ratio $G_{\text{outer}}/G_{\text{center}}$ of an average value G of an in-crystal temperature gradient in a pulling axis direction within a temperature range, a silicon melting point to 1350 °C, at a crystal outer surface to that at a crystal center is set to 1.10 to 1.50. A method of producing a device wafer suitable for an efficient production, wherein a ratio between an OSF ring inner diameter and a crystal diameter, $G1 \times G2$, and $G1_{\text{edge}}/G1_{\text{center}}$ are controlled to implement relations, $(1.15 \leq (G1_{\text{edge}}/G1_{\text{center}}) \leq 1.25)$ and $(0.5 < (\text{OSF ring inner diameter/crystal diameter}) < 1.06 \times (G1 \times G2)^{-0.2})$, to thereby obtain a silicon single crystal having a gate oxide integrity at C mode yield of at least 60% and being free from dislocation.